ON THE GENERIC RELATIONS OF PLATYRHINA EXASPERATA.

By DAVID S. JORDAN and CHARLES H. GILBERT.

A short time since a small ray was described by the present writers, from San Diego, under the name of *Platyrhina exasperata*. (Proc. U. S. Nat. Mus. 1880, ——.) Soon after a second species was described by us, from Santa Barbara, as *Platyrhina triseriata*. (Proc. U. S. Nat. Mus. 1880, ——.)

The two species are certainly not congeneric. The former species has the skin above covered with stellated prickles of different sizes, and resembles the genus *Raia*. The latter is covered over by a uniform fine shagreen, and resembles the species of *syrrhina* and *rhinobatus*. So far as we can ascertain from the description given by Duméril and Günther of *Platyrhina sinensis* and *Platyrhina schœnleini*, these two species agree with *Platyrhina triseriata* in the character of the dermal covering, as well as in form of body. We propose therefore to consider *Platyrhina exasperata* as the type of a distinct genus, *Zapteryx*, distinguished from *Platyrhina* by the presence of detached, unequal, stellated prickles on the skin above, instead of the uniform shagreen covering found in *Platyrhina*, and from *Raia* by the convex outline of the ventrals and by the greater development of the dorsal and caudal fins. In *Raia* the ventrals are always emarginate.

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REMARKS ON THE SPECIES OF THE GENUS CHIRUS FOUND IN SAN FRANCISCO MARKET, INCLUDING ONE HITHERTO UNDESCRIBED.

By W. N. LOCKINGTON.

Four species of the genus *Chirus* occur in the markets of this city. The two most abundant of these are *C. constellatus* and *C. guttatus* Grd. Of the others, one is *C. pictus* Grd., while the other has until now remained undescribed.

C. pietus is separated from the others by some sufficiently obvious external characters, beside those of color, as will be evident from the subsequent remarks, but the writer is unable to find any constant character except that of the coloration by which to distinguish the other three species.

As, however, he has now seen several hundred examples of *C. guttatus* and *C. constellatus*, and a large number of both the other species, and as, notwithstanding the considerable variation in the size, number, and position of the marking of each species, neither on any occasion shows the slightest tendency to approach the pattern of another, he submits that in this group the pattern of the coloration may be considered specific.

Difficult though it may be to prove upon paper the distinctness of these forms, there do not exist on this coast any other four species belonging to one group which can be so unerringly separated by the eye.

Diagnosis.

Suborbital stay scaleless; diameter of orbit about $\frac{1}{10}$ of total length.	Sides with purple blotches; pectorals barred.	*C. pictus.*
Suborbital stay scaly; diameter of orbit about $\frac{1}{10}$ of total length.	Sides with rings of small dark round spots surrounding areas of lighter color than the general ground; pectorals sharply spotted.	*C. constellatus.*
	Sides with irregularly scattered circular or subcircular spots; pectorals nearly plain.	*C. guttatus.*
	Sides with irregularly shaped blotches, disposed in five or six longitudinal series.	*C. maculo-seriatus.*

C. pictus.

This form is more inconstant in the number of its fin-rays and in the coloration than any of the others.

Six specimens now before me vary as follows in the rays of the dorsal and anal:

No. 1. Locality, San Francisco market..... D. XX, $\frac{1}{22}$; A. 21
No. 2. Locality, San Francisco market..... D. XXI, $\frac{1}{21}$; A. 22
No. 3. Locality, San Francisco market..... D. XXI, $\frac{1}{22}$; A. 21
No. 4. Locality, Kadiak Island, Alaska..... D. XIX, $\frac{1}{21}$; A. 21
No. 5. Locality, San Francisco market..... D. XIX, $\frac{1}{23}$; A. 21
No. 6. Locality, Kadiak Island, Alaska..... D. XVIII, $\frac{1}{22}$; A. 24

The color of all the species changes rapidly on exposure to air or immersion in alcohol.

No. 2, when fresh, was of a brilliant green upon the belly and lower part of the flanks, deepening into brown above, and blotched with bright purple. After exposure, the ground tint becomes first reddish, and finally dull purplish brown, while the purple blotches gradually fade into dirty white.

The dorsal and anal are blotched like the body, and the pectorals barred with the same tints.

In all the examples examined, the ventrals are shorter than the pectorals, and fall considerably short of the vent; and the lowest pair of lateral lines unite much nearer to the ventrals than to the vent.

I can perceive no constant difference between specimens from Alaska and those found in our market. The most ordinary number of rays in the first dorsal appears to be nineteen.

No. 1 differs from all the others in the total absence of brighter blotches upon the sides, but the pectorals are barred, and all other characters coincide.

Chirus constellatus.

First dorsal, in all the individuals examined, with twenty-one rays,

and ventrals overpassing pectorals and reaching nearly or quite to the vent.

Lowest lateral line usually forking about midway between ventrals and vent.

Pectoral spotted all over with light and dark spots.

Common in the bay of San Francisco.

Chirus guttatus.

First dorsal with twenty or twenty-one rays, ventrals and pectorals usually about even posteriorly and scarcely reaching to the vent; position of the fork of the lowest lateral line somewhat variable.

Spots on sides bright orange when fresh, but becoming dark on exposure to air or alcohol.

Chirus maculo-seriatus nov. sp.

D. XXI, $\frac{1}{23}$; A. 22–23; P. 19; V. $\frac{1}{5}$; C. (principal rays) 15; L. lat. 110.

Body elongate, compressed, the greatest height about one-fifth of the length (caudal included); greatest thickness, at opercles, about three-fourths of the greatest height; depth of caudal peduncle about $\frac{10}{27}$ of the greatest depth; head about one-fourth of total length.

Dorsal outline rising at an angle of about 20°, with a slight curve to the origin of the dorsal, or to about its fifth ray, whence it descends gradually in a straight line to the caudal peduncle, which is wedge-shaped, increasing in width towards base of tail.

Abdominal outline descending slowly to the scapular girdle, thence nearly level to anal; anal base sloping upwards with a slight curve.

Snout longer than orbit; interocular width slightly less than length of orbit; forehead slightly curved transversely, summit of ascending premaxillary processes rising slightly above the profile of the snout.

Anterior nostril with the edges raised into a short tube.

Eyes lateral, elliptical; a fimbriated flap over the orbit.

Jaws subequal, the upper slightly projecting; posterior extremity of maxillary reaching slightly beyond anterior margin of orbit, that of mandible below the center of the pupil.

Cardiform teeth in both jaws, in several rows in front, diminishing to a single series at the sides, the outer row larger than the others; a patch of similar teeth upon the vomer, and occasionally a few on the anterior part of the palatines, a character which certainly cannot be of generic value in this group. Branchiostegals six; gill-openings continuous below, no isthmus; gill-rakers obsolescent, transverse.

Dorsal arising above the flap of the opercle, slightly in front of the pectoral base, deeply notched; the first dorsal strongly arched on its upper margin; the first ray much shorter than the second; the other rays increasing in height to about the fourth, thence diminishing to the twentieth, which is considerably shorter than the unarticulated ray at the commencement of the second portion of the dorsal.

Second dorsal lower than the first, the rays increasing to about the

fourth; upper margin straight, slightly diminishing in height to the nineteenth ray, four last rays diminishing rapidly.

Anal commencing even with the second dorsal, and coterminous and similar to it; rays increasing to the third; last ray short.

Caudal slightly emarginate on posterior margin, with numerous accessory rays running some distance up the profile of the caudal peduncle; principal rays twice bifurcate. Vent somewhat in advance of the anal.

Pectorals rounded, central rays longest, their tips about even with the nineteenth dorsal spine; rays simple; base vertical.

Ventrals inserted well behind the pectorals, beneath the sixth dorsal spine; second ray longest, its tip slightly overpassing the vent; three longest rays overpassing the pectoral.

Lateral lines five on each side, two above and two below the principal line.

The uppermost on each side commence close together on the occiput, run along the dorsal base outside the first row of scales, and end at the fourteenth ray of the soft dorsal.

The second commences on the occiput, and is continued to the base of the uppermost principal caudal ray.

The third commences on the scapular region, runs parallel with the dorsal outline till it becomes median upon the caudal peduncle, and is continued some distance upon the caudal.

The fourth commences slightly in front of the pectoral base, and continues parallel to the abdominal outline to opposite the seventeenth anal ray.

The fifth pair are united into a median abdominal line at a point about half way between the vent and the axil of the ventrals; anterior to this point the single line runs forward to the pectoral girdle; posterior to it each division runs parallel with the anal base, and ends at the base of the lowest principal caudal ray.

Scales ctenoid, rather larger on the anterior portion of the body than on the posterior; the ciliation obsolete on the scales of the side of the head. Suborbital stay squamose. Snout, preorbital, and interoperculum scaleless. Membrane between caudal rays scaly.

Pectoral base scaly; some small scales at base of rays of first dorsal; second dorsal with small scales between the rays for about half its height. Anal scaleless.

Color, in alcohol, brown, blotched with yellowish blotches in longitudinal series.

This hitherto undescribed species is tolerably common in the markets of San Francisco at some seasons of the year.

When fresh, the series of blotches along the sides are bright orange and bright maroon.

A type specimen is in the National Museum.

Table of measurements.

Current number of specimen Locality	No. 1. San Francisco.		No. 2. San Francisco.	
	Inches and 100ths.	100ths of length.	Inches and 100ths.	100ths of length, including caudal.
Extreme length	13.35	.....	11.60	.....
Body:				
Greatest height	2.73	.208	2.90	.248
Greatest width	1.99	.15	1.70	.144
Height at ventrals	2.62	.197	2.90	.248
Least height of caudal peduncle	1.03	.078	1.03	.09
Head:				
Greatest length	3.28	.245	2.96	.26
Distance from snout to nape	2.2	.165	1.93	.165
Width of interorbital area	.62	.045	.66	.056
Length of snout	.95	.07	1.00	.86
Length of maxillary	1.20	.09	1.14	.100
Length of mandible	1.53	.115	1.36	.085
Diameter of orbit	.68	.051	.....	.....
Dorsal (*spinous*):				
Distance from snout	3.20	.24	3.06	.262
Length of base	3.32	.25	3.30	.285
Greatest height	1.64	.123	.....	.....
Height at first spine	1.00	.074	.....	.....
Dorsal (*soft*):				
Length of base	3.80	.285	3.50	.30
Height at longest ray	1.32	.10	.....	.....
Anal:				
Distance from tip of lower jaw	6.48	.485	5.55	.48
Length of base	3.67	.275	3.46	.296
Height at longest ray	1 22	.093	.....	.....
Caudal:				
Length of middle rays	1.78	.135	1.60	.138
Length of external rays	1.84	.14	1.80	.152
Pectoral:				
Distance from snout	3.43	.257	2.85	.245
Length	2.85	.215	2.36	.202
Ventral:				
Distance from tip of lower jaw	4.16	.314	3.25	.28
Length	2.15	.162	2.16	.185
Branchiostegals	6	.....	6	.....
Dorsal	XXI, $\frac{1}{33}$	.....	XXI, $\frac{1}{33}$	.....
Anal	23	.....	22	.....
Caudal, principal rays	15	.....	15	.....
Pectoral	19	.....	19	.....
Ventral	$\frac{1}{5}$	.....	$\frac{1}{5}$	.....
Number of scales in lateral line to base of caudal	110	.....	111	.....
Number of transverse rows above lateral line	15	.....	15	.....

The proportions of the two specimens measured differ considerably, No. 2 being much deeper in proportion to its length than No. 1, and having its greatest depth immediately over the ventrals, instead of at the origin of the dorsal.

In consequence of the more elongate form, the insertions of the ventrals and of the pectorals are relatively farther back in No. 1 than in No. 2.

Similar differences of proportion exist in *C. constellatus*, and it is evident that no weight can be attached to proportion in distinguishing these species.

Neither is it advisable, in view of individual differences observed, to attach much significance to the length of the ventrals, or to the position of the fork of the lowest lateral line.

C. maculo-seriatus is by no means scarce in our markets, but is less abundant than *guttatus* and *constellatus*.

An example of this form is in the National Museum at Washington, numbered ———.